

What is calimed is:

1 1. A semiconductor device comprising a support member, a
2 semiconductor chip, a die-bonding material for attaching the
3 semiconductor chip to the support member, and a resin
4 encapsulant member for encapsulating the semiconductor chip,
5 wherein:

6 said die-bonding material is a film containing an organic
7 matter; said film having a water absorption of 1.5% by volume or
8 less.

1 2. A semiconductor device comprising a support member, a
2 semiconductor chip, a die-bonding material for attaching the
3 semiconductor chip to the support member, and a resin
4 encapsulant member for encapsulating the semiconductor chip,
5 wherein:

6 said die-bonding material is a film containing an organic
7 matter; said film having a saturation moisture absorption of 1.0%
8 by volume or less.

1 3. A semiconductor device comprising a support member, a
2 semiconductor chip, a die-bonding material for attaching the
3 semiconductor chip to the support member, and a resin
4 encapsulant member for encapsulating the semiconductor chip,
5 wherein:

6 said die-bonding material is a film containing an organic
7 matter; said film having a residual volatile component in an

8 amount not more than 3.0% by weight.

1 4. A semiconductor device comprising a support member, a
2 semiconductor chip, a die-bonding material for attaching the
3 semiconductor chip to the support member, and a resin
4 encapsulant member for encapsulating the semiconductor chip,
5 wherein:

6 said die-bonding material is a film containing an organic
7 matter; said film having a modulus of elasticity of 10 MPa or less
8 at a temperature of 250 °C.

1 5. A semiconductor device comprising a support member, a
2 semiconductor chip, a die-bonding material for attaching the
3 semiconductor chip to the support member, and a resin
4 encapsulant member for encapsulating the semiconductor chip,
5 wherein:

6 said die-bonding material is a film containing an organic
7 matter; said film having, at the stage where the semiconductor
8 chip has been bonded to the support member, a void volume of 10%
9 or less in terms of voids present in the die-bonding material and
10 at the interface between the die-bonding material and the support
11 member.

1 6. A semiconductor device comprising a support member, a
2 semiconductor chip, a die-bonding material for attaching the
3 semiconductor chip to the support member, and a resin

4 encapsulant member for encapsulating the semiconductor chip,
5 wherein:

6 said die-bonding material is a film containing an organic
7 matter; said film having a peel strength of 0.5 Kgf/5 × 5 mm chip
8 or above at the stage where the semiconductor chip has been
9 bonded to the support member.

1 7. A semiconductor device comprising a support member, a
2 semiconductor chip, a die-bonding material for attaching the
3 semiconductor chip to the support member, and a resin
4 encapsulant member for encapsulating the semiconductor chip,
5 wherein:

6 said die-bonding material is a film containing an organic
7 matter; said film i) having a planar dimension not larger than the
8 planar dimension of the semiconductor chip, and ii) not protruding
9 outward from the region of the semiconductor chip at the stage
10 where the semiconductor chip has been bonded to the support
11 member.

1 8. A process for fabricating a semiconductor device,
2 comprising the steps of attaching a semiconductor chip to a
3 support member, and encapsulating the semiconductor chip with a
4 resin:

5 said attaching being carried out with a filmy die-bonding
6 material containing an organic matter; said filmy die-bonding
7 material having a water absorption of 1.5% by volume or less.

1 9. A process for fabricating a semiconductor device,
2 comprising the steps of attaching a semiconductor chip to a
3 support member, and encapsulating the semiconductor chip with a
4 resin;

5 said attaching being carried out with a filmy die-bonding
6 material containing an organic matter; said filmy die-bonding
7 material having a saturation moisture absorption of 1.0% by
8 volume or less.

1 10. A process for fabricating a semiconductor device,
2 comprising the steps of attaching a semiconductor chip to a
3 support member, and encapsulating the semiconductor chip with a
4 resin;

5 said attaching being carried out with a filmy die-bonding
6 material containing an organic matter; said filmy die-bonding
7 material having a residual volatile component in an amount not
8 more than 3.0% by weight.

1 11. A process for fabricating a semiconductor device,
2 comprising the steps of attaching a semiconductor chip to a
3 support member, and encapsulating the semiconductor chip with a
4 resin;

5 said attaching being carried out with a filmy die-bonding
6 material containing an organic matter; said filmy die-bonding
7 material having a modulus of elasticity of 10 MPa or less at a

8 temperature of 250 °C.

1 12. A process for fabricating a semiconductor device,
2 comprising the steps of attaching a semiconductor chip to a
3 support member, and encapsulating the semiconductor chip with a
4 resin;

5 said attaching being carried out with a filmy die-bonding
6 material containing an organic matter; said filmy die-bonding
7 material having, at the stage where the semiconductor chip has
8 been bonded to the support member, a void volume of 10% or less
9 in terms of voids present in the die-bonding material and at the
10 interface between the die-bonding material and the support
11 member.

1 13. A process for fabricating a semiconductor device,
2 comprising the steps of attaching a semiconductor chip to a
3 support member, and encapsulating the semiconductor chip with a
4 resin;

5 said attaching being carried out with die-bonding material
6 comprising a filmy die-bonding material containing an organic
7 matter; said filmy die-bonding material having a peel strength of
8 0.5 kgf/5 × 5 mm chip or above at the stage where the
9 semiconductor chip has been bonded to the support member.

1 14. A process for fabricating a semiconductor device,
2 comprising the steps of attaching a semiconductor chip to a

3 support member, and encapsulating the semiconductor chip with a
4 resin;

5 said attaching being carried out with a filmy die-bonding
6 material containing an organic matter; said filmy die-bonding
7 material i) having a planar dimension not larger than the planar
8 dimension of the semiconductor chip, and ii) not protruding
9 outward from the region of the semiconductor chip at the stage
10 where the semiconductor chip has been bonded to the support
11 member.

1 15. A process for fabricating a semiconductor device,
2 comprising the steps of attaching a semiconductor chip to a
3 support member, and encapsulating the semiconductor chip with a
4 resin;

5 said attaching being carried out with a filmy die-bonding
6 material containing an organic matter;

7 the process further comprising the steps of
8 mounting said semiconductor chip on said filmy die-bonding
9 material; and

10 attaching said semiconductor chip to said filmy die-bonding
11 material under conditions of a temperature of 150°C to 250°C,
12 bonding time of 0.1 (inclusive) second to 2 seconds, and a
13 pressure of 0.1 to 4 gf/mm².

1 16. A process for fabricating a semiconductor device,
2 according to any one of claims 8 to 13 and 14, further comprising

3 the steps of

4 mounting said semiconductor chip on said filmy die-bonding
5 material; and

6 attaching said semiconductor chip to said filmy die-bonding
7 material under conditions of a temperature of 150°C to 250°C,
8 bonding time of 0.1 (inclusive) second to 2 seconds, and a
9 pressure of 0.1 to 4 gf/mm².

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